

CLAIMS

1. A solid acid catalyst represented by $\text{HTi}_x\text{Nb}_y\text{O}_5$, wherein x is $1.1 < x < 1.2$ and y is $0.9 > y > 0.8$, having a Ti/Nb atomic ratio z of $1 < z < 1.5$, obtained by proton changing of alkali metal cation of cation changeable lamellar metal oxide in which polyanion nano-sheet comprising lamellar metal oxide layers of titanium niobate lying alkali metal cation between are regularly laminated by inorganic acid or organic acid adjusted to 0.0001M to 1M, delaminating said laminated layers temporarily by inserting cation selected from the group consisting of organic amine or organic ammonium between layers of proton exchangers, preparing an aqueous colloidal solution comprising metal oxide sheets to which said organic amine or organic ammonium is absorbed, then proton exchanging said organic amine or organic ammonium by adding inorganic acid or organic acid adjusted to 0.0001M to 1M to said aqueous colloidal solution and simultaneously coagulating on titanium niobate nano-sheet.
2. The solid acid catalyst of claim 1, wherein a Ti/Nb atomic ratio z is $1.2 < z < 1.4$.
3. The solid acid catalyst of claim 1, wherein organic amine or organic ammonium is at least one selected from the group consisting of ethylamine, propylamine or tetrabutylammonium.
4. The solid acid catalyst of claim 1, wherein a Ti/Nb atomic ratio z is $1.2 < z < 1.4$ and organic amine or organic ammonium is at least one selected from the group consisting of ethylamine, propylamine or tetrabutylammonium.
5. The solid acid catalyst of claim 1, wherein the surface area of coagulated titanium niobate nano-sheet is 10 times or more to the surface area of cation changeable lamellar metal oxide proton exchanger and is in the range from $60\text{m}^2\text{g}^{-1}$ to $150\text{ m}^2\text{g}^{-1}$.
6. The solid acid catalyst of claim 1, wherein a Ti/Nb atomic ratio z is

$1.2 < z < 1.4$ and the surface area of coagulated titanium niobate nano-sheet is 10 times or more to the surface area of cation changeable lamellar metal oxide proton exchanger and is in the range from $60\text{m}^2\text{g}^{-1}$ to $150\text{ m}^2\text{g}^{-1}$.

7. The solid acid catalyst of claim 1, wherein a Ti/Nb atomic ratio z is $1.2 < z < 1.4$, organic amine or organic ammonium is at least one selected from the group consisting of ethylamine, propylamine or tetrabutylammonium and the surface area of coagulated titanium niobate nano-sheet is 10 times or more to the surface area of cation changeable lamellar metal oxide proton exchanger and is in the range from $60\text{m}^2\text{g}^{-1}$ to $150\text{ m}^2\text{g}^{-1}$.

8. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 1.

9. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 2.

10. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 3.

11. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 4.

12. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 5.

13. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 6.

14. An ester dehydration condensation catalyst comprising the solid acid catalyst of claim 7.